
11. STORM WATER

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- P. NPDES Industrial Storm Water Investigation and Case Development Worksheet (Industrial)
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- X. No Exposure Certification Form

11. A. Background and History

Regulation Overview (40 CFR 122.26)

In addition to materials in this chapter, inspectors must be familiar with Chapter 1 - "Introduction" & Chapter 2 - "Inspection Procedures."

The 1972 amendments to the Federal Water Pollution Control Act (also known as the Clean Water Act or CWA) prohibited the discharge of any pollutants to navigable waters from a point source unless the discharge was authorized by a National Pollutant Discharge Elimination System (NPDES) permit. At the time of the 1972 amendments to the CWA, sewage treatment plant outfalls and industrial process wastewater were easily identified as point sources responsible for contributing to the degradation of water quality. However, as pollution control measures were instituted, it became evident that more diffuse sources, such as agricultural and storm water runoff, were also contributing to the problem. In response to this concern, the Water Quality Act (WQA) of 1987 added Section 402(p) to the CWA and required the Environmental Protection Agency (EPA) to establish a comprehensive two-phased approach to address storm water discharges.

1987 Amendments to CWA
402(p) Municipal and industrial storm water discharges

- (1) General rule** - prohibits permits for discharges composed entirely of storm water prior to October 1, 1994 with some exceptions
- (2) Exceptions** - Identifies five types of storm water discharges that are to be permitted prior to October 1, 1994
- (3) Permit requirements** - identifies permitting approach for industrial and municipal storm water discharges
- (4) Permit application requirements** - identifies application requirements for industrial and municipal storm water discharges
- (5) Studies** - identifies requirement for report to Congress on other sources of storm water discharges
- (6) Regulations** - requires regulations for permitting other types of storm water discharges to protect water quality

In response to section 402(p)(2) of the Act, Phase I Storm Water regulations were promulgated on November 16, 1990 (55 FR 47990). The regulations specified that the following five storm water discharges must apply for a NPDES permit:

- (A) A discharge subject to a NPDES permit before February 4, 1987
- (B) A discharge associated with industrial activity (including construction activities >5 acres)
- (C) A discharge from a municipal separate storm sewer system serving a population of 250,000 or more (large MS4s)
- (D) A discharge from a municipal separate storm sewer system serving a population of 100,000 or more but less than 250,000 (medium MS4s) and
- (E) A discharge that an NPDES permitting authority determines to be contributing to a violation of a water quality standard or a significant contributor of pollutants to waters of the United States.

Consistent with Section 402(p)(6) of the Act, EPA Promulgated Phase II Storm Water regulations on December 8, 1999 (64 FR 68722). The Phase II regulations are designed to protect water quality from other types of storm water discharges not already covered by Phase I regulation. Phase II adds regulated small municipal separate storm sewers systems (MS4s)

and small construction (disturbing between 1 and 5 acres) to those entities required to obtain permit coverage for storm water discharges.

Storm water regulations are codified primarily in 40 CFR 122.26 but also are addressed in several other locations in the Federal regulations. A summary of these sections is provided in Table 11-1. ***The storm water regulations apply to discharges both to waters of the United States and to municipal separate storm sewer systems (MS4s). Storm water discharges to sanitary sewer systems or to combined sewer systems are not covered by the storm water regulations.***

EPA's NPDES Storm Water Program focuses on three distinct types of regulated entities: industrial facilities, construction sites, and municipal separate storm sewers systems (MS4s). For clarity, the remainder of this chapter discusses these three types of permitted entities separately. Two tables are attached as additional references: Table 11-2 NPDES Storm Water Permit Application and Issuance Deadlines; and Table 11-3, Summary of the Federal Permit Requirements Under the NPDES Storm Water Program.

Regarding Table 11-2, Section 402(p)(4) of the CWA identifies specific deadlines for the issuance or denial of all storm water permits. However, since EPA was unable to promulgate its regulations by the statutory deadline, the regulations require issuing or denying all storm water permits within one year of the permit application regulatory deadline consistent with Congress' intent. Section 402(p)(4) also specifies that permits shall provide for compliance as expeditiously as practicable, but in no event later than 3 years after the permit issuance date.

Table 11-1
Summary of Storm Water Permitting Regulations

40 CFR 122 - EPA Administered Permit Programs: The National Pollutant Discharge Elimination System

| | |
|-----------|--|
| 122.1 | Purpose and scope |
| 122.21 | Application for a permit |
| 122.22 | Signatories to permit applications and reports |
| 122.26(a) | Permit requirements |
| 122.26(b) | Definitions |
| 122.26(c) | Application requirements for storm water discharges associated with industrial activity |
| 122.26(d) | Application requirements for large and medium municipal separate storm sewer discharges |
| 122.26(e) | Application deadlines |
| 122.26(f) | Petitions |
| 122.26(g) | Conditional exclusion for "no exposure" of industrial activities and materials to storm water |
| 122.28 | General permits |
| 122.30 | What are the objectives of the storm water regulations for small MS4s? |
| 122.31 | As a Tribe, what is my role under the NPDES storm water program? |
| 122.32 | As an operator of a small MS4, am I regulated under the NPDES storm water program? |
| 122.33 | If I am an operator of a regulated small MS4, how do I apply for an NPDES permit and when do I have to apply? |
| 122.34 | As an operator of a regulated small MS4, what will my NPDES MS4 storm water permit require? |
| 122.35 | As an operator of a regulated small MS4, may I share the responsibility to implement the minimum control measures with other entities? |
| 122.36 | As an operator of a regulated small MS4, what happens if I don't comply with the application requirements in 122.33 through 122.35? |
| 122.37 | Will the small MS4 storm water program regulations at 122.32 through 122.36 and 122.35 of this chapter change in the future? |
| 122.42 | Additional conditions applicable to specified categories of NPDES permits |
| 122.44 | Establishing limitations, standards, and other permit conditions |
| 122.62 | Modifications or revocation and reissuance of permits |

40 CFR Part 123 - State Program Requirements

| | |
|--------|--|
| 123.25 | Requirements for permitting |
| 123.35 | As the NPDES permitting authority for regulated small MS4s, what is my role? |

40 CFR Part 124 - Procedures for Decision making

| | |
|------------|---|
| 124.52 | Permits required on a case-by-case basis |
| Appendix E | Rainfall zones of the United States |
| Appendix F | Incorporated places with populations greater than 250,000 according to latest decennial census by Bureau of Census |
| Appendix G | Incorporated places with populations greater than 100,000 and less than 250,000 according to latest decennial census by Bureau of Census |
| Appendix H | Counties with unincorporated urbanized areas with a population of 250,000 or more according to the latest decennial census by the Bureau of Census |
| Appendix I | Counties with unincorporated urbanized areas greater than 100,000, but less than 250,000 according to the latest decennial census by the Bureau of Census |

Table 11-2

NPDES Storm Water Permit Application and Issuance Deadlines

| Type of Application/ Type of Discharge | Permit Application | Permit Coverage Deadline |
|--|---|---|
| Industrial Storm Water | | |
| Individual Permit Application Existing facilities | October 1, 1992 | October 1, 1993 |
| New facilities | 180 days prior to commencement of industrial activity | 1 year after receipt of complete permit application |
| New construction facilities | 90 days prior to commencement of construction | 1 year after receipt of complete permit application |
| General Permit Application ¹ Existing facilities | October 1, 1992 | As specified in GP |
| New facilities | 90 days prior to commencement of discharge unless specific general permit specifies otherwise | As specified in GP |

¹Facilities applying for general permits must submit notices of intent (NOIs), rather than permit applications.

Table 11-3

Summary of Federal Permit Requirements Under the NPDES Storm Water Program

| | Municipal Separate Storm Sewer Systems (MS4s) | Construction Activity | Industrial Activity |
|---|--|--|---|
| Phase I Requirements (November 16, 1990) | <p>Medium and Large MS4s (122.26(d))</p> <ul style="list-style-type: none"> • Establish adequate legal authority to control discharges to storm sewer, inspect, and enforcement. • Identify major storm water sources and locations of outfalls, and provide characterization data of discharges. • Develop Storm Water Management Program: <ul style="list-style-type: none"> - Controls for residential and commercial activities - Illicit discharge detection and elimination program - Controls for municipal and industrial activities - Construction site controls • Assess control and perform fiscal analysis • Submit annual report | <p>Category (x) Construction Activity (5+Acres)</p> <p><u>CGP:</u></p> <ul style="list-style-type: none"> • Storm Water Pollution Prevention Plan (SWPPP) <ul style="list-style-type: none"> - Site description - Description of BMPs for erosion and sediment, post-construction storm water management, and other controls - Self-evaluation and recordkeeping | <p>Ten Categories of Industrial Activity (Categories (i)-(ix), (xi))</p> <p><u>MSGP:</u></p> <ul style="list-style-type: none"> • SWPPP <ul style="list-style-type: none"> - Site evaluation - Description of appropriate storm water management BMPs - Self-evaluation, monitoring, recordkeeping, and, in some circumstances, reporting • If discharging into a medium or large MS4, notify the MS4 operator |

Table 11-3**Summary of Federal Permit Requirements Under the NPDES Storm Water Program****(Continued)**

| Phase II Requirements (December 8, 1999) | Regulated Small MS4 <ul style="list-style-type: none"> • Storm Water Management Program: <ul style="list-style-type: none"> - Public education and outreach - Public participation efforts - Illicit discharge detection and elimination program - Construction runoff control program for construction activity disturbing 1 acre or greater - Post-construction runoff control program for construction activity disturbing 1 acre or greater - Good housekeeping/ pollution prevention for municipal operations • Conduct assessment of identified BMPs and measurable goals for each minimum control measure • Submit periodic program assessment reports | Small Construction Activity (≥1 and <5 acres) <ul style="list-style-type: none"> • Similar to category (x) Construction Activity requirements above • Small construction waivers requirement | Industrial <ul style="list-style-type: none"> • Conditional no exposure waiver |
|---|--|--|--|
|---|--|--|--|

11. B. Storm Water Discharges Associated with Industrial Activity (Not Including Construction)

Applicability (Who is Covered)

The storm water regulations identify 11 categories of facilities that are associated with industrial activity (40 *CFR* 122.26(b)(14)(i)-(xi)). EPA defines these categories of industrial activity using a combination of standard industrial classification codes and facility activities. A description of these 11 categories is provided in Figure 11-1. One of the 11 categories, category (x), construction activity, is discussed separately in Section 11.C because of the significant difference in site activity and requirements from the other 10 industrial categories.

EPA estimates that nationwide more than 150,000 industrial facilities are required to obtain permit coverage for storm water discharges associated with industrial activity.

The NPDES regulations, at 40 *CFR* 122.26(b)(14) define “storm water discharges associated with industrial activity.” Specifically, the phrase means “the discharge from any one conveyance which is used for collecting and conveying storm water and which is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.” For the 10 categories of industries identified in 40 *CFR* 122.26(b)(14)(i)-(ix), and (xi), the term includes, but is not limited to, storm water discharges from the following:

- Industrial plant yards
- Immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility
- Material handling sites
- Refuse sites
- Sites used to apply or dispose of process wastewaters (as defined at 40 *CFR* Part 401)
- Sites used for storage and maintenance of material handling equipment
- Sites used for residual treatment, storage, or disposal

Material handling activities include storage loading and unloading, transportation, or conveyance of any raw material, intermediate product, final product, by-product, or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities such as the office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from any of the manufacturing, processing, or raw material storage areas.

- Shipping and receiving areas
- Manufacturing buildings
- Storage areas (including tank farms) for raw materials and intermediate and finished products
- Areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water.

One of the first questions that must be answered by the inspector when evaluating the applicability of the storm water permitting regulations to a specific facility is whether the facility performs any industrial activities subject to the storm water permitting requirements. Often, this decision hinges upon the facility's primary SIC code, which is based on the primary activity occurring at the site. (See Table 11-4 for a list of primary SIC codes covered by the storm water permitting requirements.) Where multiple activities are conducted at a site, with each activity having a distinct SIC code, EPA recommends using the value of receipts or revenues with the activity generating the most revenue or employing the most people being the primary activity of the facility. If the SIC code for this primary activity is identified in 40 *CFR* 122.26(b)(14), then the facility is subject to the storm water permitting requirements. If, however, the facility's primary activity is not included in 40 *CFR* 122.26(b)(14), the facility is not subject to the permitting requirements even if the facility conducts secondary activities that are identified therein. The approach is different for industrial sectors identified with narrative rather than SIC codes. In these instances, any activity performed that meets the narrative description is required to obtain permit coverage for those specific activities. For more information on compliance assistance for transportation, construction, auto recyclers, etc. go to www.assistancecenters.net.

Exemption for Mining or Oil and Gas Facilities

Storm water runoff from oil and gas exploration, production, processing, transmission, and treatment operations and mining operations are exempt from CWA permitting requirements provided that the runoff is not contaminated with, or does not come into contact with, any overburden, raw material, intermediate products, finished product, byproduct, or waste products located on the site of such operations.

Federal regulations at 40 *CFR* §122.26(c)(1)(iii) specify that storm water discharges from oil and gas exploration, production, processing, or treatment operations, or transmission facilities do need permit coverage if the facility has had a discharge of storm water (A) resulting in the discharge of a reportable quantity for which notification is or was required pursuant to 40 *CFR* 117.21, 40 *CFR* 302.6 or 40 *CFR* 110.6 or (B) that contributes to a violation of a water quality standard.

Consistent with 40 *CFR* §122.26(c)(1)(iv), a discharge composed entirely of storm water from a mining operation is not required to submit a permit application unless the discharge has come into contact with any overburden, raw material, intermediate products, finished product, byproduct, or waste products located on the site of such operations.

Note that the CWA exemption for oil, gas, and mining operations does not apply to construction activities related to those operations. Currently, construction activities at oil, gas and mining

operations which exceed five acres, or are part of a larger common plan of development, are required to obtain permit coverage, either under a state or federal construction permit.

Effective March 10, 2005,

construction activities at oil, gas and mining operations which exceed one acre will be required to obtain permit coverage.

An informational brochure is available on EPA's Region VI website on Stormwater Best Management Practices (BMP) titled *"Your Oil and Gas Construction Activities May Need Coverage Under the Clean Water Act's Stormwater Program!"*

No exposure means all industrial materials and activities are protected by a storm resistant shelter to prevent exposure to rain, snow, snowmelt, and/or runoff. Industrial materials or activities include, but are not limited to, material handling equipment or activities, industrial machinery, raw materials, intermediate products, by-products, final products, or waste products.

Conditional No Exposure Exclusion

The Phase II Conditional No Exposure Exclusion significantly expands the scope of the original no exposure eligibility requirements. Under the conditional no exposure exclusion, operators of industrial facilities in any of the 10 categories of "storm water discharges associated with industrial activity," have the opportunity to certify to a condition of "no exposure" if their industrial materials and operation activities are not exposed to storm water. As long as the condition of "no exposure" exists at a certified facility, the operator is excluded from NPDES industrial storm water permit requirements. The conditional no exposure exclusion replaces the previous "light industry" no exposure exemption included under the Phase I Storm Water Program.

Permit Applications for Storm Water Discharges Associated With Industrial Activity

Industrial facilities have two permit options for storm water discharges - coverage under (1) a general permit or (2) an individual permit. Most industrial facilities have permit coverage under a general permit because it is the most efficient permit option for permitting large number of facilities with similar discharge characteristics. Where EPA is the NPDES permitting authority, the Multi-Sector General Permit (MSGP), most recently issued on October 30, 2000 (65 FR 64746), is the general permit available to facility operators. The MSGP covers 30 industrial sectors. Standard Industrial Classification (SIC) codes and narrative descriptions identify the industrial facilities within each of the 30 sectors. The EPA MSGP is available for use in areas only where EPA is the permitting authority. Similar general permits may be available in NPDES authorized states. Information related to general and individual permits is presented below.

General Permit/Notice of Intent

To apply for permit coverage under the MSGP, a facility operator must complete and submit to the appropriate NPDES permitting authority a Notice of Intent (NOI) form. The NOI requests a variety of basic facility information, including latitude/longitude of the facility, and information related to the Endangered Species Act and the National Historic Preservation Act. The deadline for submission of an NOI requesting coverage under the MSGP-2000 was January 29, 2001 for existing sources. (The MSGP-2000 preamble and permit contain conflicting information regarding the deadline. EPA published a technical correction that contains the correct deadline of January 29, 2001 [66 FR 1675] January 9, 2001.)

Under EPA's current MSGP, new facilities and those facilities that change ownership or operators must submit an NOI at least 48 hours prior to commencement of the industrial activity at the site or change in ownership/operator.

To discontinue permit coverage, a facility operator must complete and submit to the appropriate NPDES permitting authority a Notice of Termination (NOT) form. The most recent version of the NOT form is available in Addendum E of the Federal Register containing the MSGP-2000.

Individual Permits

There are certain circumstances where a general permit is either not available or not applicable to a specific facility. Examples of when an individual permit is the only option include:

- The NPDES permitting authority requires a facility operator to apply for individual permit coverage.
- The facility operator is unable to certify eligibility with the conditions of the general permit.

In these situations, a facility operator must obtain coverage under an individual permit that the NPDES permitting authority will develop with requirements specific to that facility.

Establishing Eligibility

Endangered Species Act

EPA's NOI requires the facility to certify that the industrial activity will not impact endangered or threatened species or designated critical habitats protected under the Endangered Species Act (ESA). This certification is unique to EPA's NOI and is not a requirement of most NPDES-delegated States' NOIs. All dischargers applying for coverage must provide application on the NOI form including: (1) whether there are listed species in proximity to the storm water or allowable non-storm water discharges or discharge-related activity; (2) under which option of the MSGP they claim eligibility for permit coverage (outlined in Addendum A of the Final Reissuance of National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities dated October 30, 2000), and (3) certification that their storm water and allowable non-storm water discharges and discharge related activities are not likely to jeopardize listed species, or certification that they are otherwise eligible for coverage due to a previous authorization under the ESA. Permittees should consult with state Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) offices to make these determinations of eligibility.

"Discharge-related activities" are defined to include activities which cause, contribute to or result in storm water and allowable non-storm water point source discharges, and measures such as the siting, construction and operation of BMPs to control, reduce or prevent pollution in the discharges. Discharge-related activities are included for compliance with ESA requirements to consider the effects of activities which are related to the activity which is permitted, *i.e.*, the storm water and non-storm water discharges.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) requires Federal agencies to take into account the effects of Federal undertakings, including NPDES general permits. An applicant is eligible for permit coverage only if: (1) the applicant's storm water discharges and BMPs to control storm water runoff do not affect a historic property, or (2) the applicant has obtained, and is in

compliance with a written agreement between the applicant and the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officers (THPO) that outlines all measures to be taken by the applicant to mitigate or prevent adverse effects to the historic property. NHPA guidance and a list of SHPO and THPO addresses are included in Addendum B of the Final Reissuance of National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities dated October 30, 2000. An electronic listing of the "National Register of Historic Places," as maintained by the National Park Service, can be accessed at <http://www.nps.gov>.

Storm Water Pollution Prevention Plan Requirements/Office Review

The operator (or applicant) must prepare a Storm Water Pollution Prevention Plan (SWPPP) for the facility before submitting a Notice of Intent for permit coverage. The SWPPP must be signed by a responsible corporate official such as a president, vice president, or general partner as identified in the MSGP. This SWPPP is to be kept at the facility at all times (or other local location accessible to the EPA, a State, Tribal or Territorial agency with jurisdiction over water quality protection; local government officials; or the operator of a MS4 receiving discharges from the site) and must be submitted for review when requested by EPA or by the operator of the municipal separate storm sewer system when the facility discharges to a municipal separate storm sewer.

For large or complex facilities, the inspector should request a copy of the SWPPP prior to inspection to be more familiar with the facility during the inspection. Otherwise, the inspector will obtain a copy of and review the SWPPP or at least parts of the SWPPP during the inspection. At a minimum, the inspector should review the site map prior to conducting the field inspection to understand the site and the existing/planned storm water controls. Depending on the time available for the inspection and the size of the SWPPP, the inspector may need to complete the remaining portion of the SWPPP review only when he or she returns to the office.

In reviewing the SWPPP, the inspector must evaluate whether it contains all of the required elements specified in the permit (e.g., the MSGP, the State General Permit in NPDES authorized States, or an individual permit issued to the facility). Typically, the MSGP requires that the SWPPP identify potential sources of pollution which may be reasonably expected to affect the quality of storm water discharges and describe and ensure implementation of practices used by the facility to reduce the pollutants in its storm water discharges. (Reviewing the SWPPP implementation is covered in the next section.) The MSGP-2000 lists the following specific items that must be included in the SWPPP:

- **Pollution Prevention Team** - identifying individuals responsible for developing, implementing, maintaining, and revising the SWPPP
- **Description of industrial activities** at the facility
- **General location map** depicting the facility and location of receiving waters
- **Legible site map** indicating:
 - direction of storm water flow
 - location of existing structural Best Management Practices (BMPs)
 - location of all surface water bodies
 - location of potential pollutant sources and where significant materials are exposed to precipitation

- location where major spills or leaks have occurred
- locations of activities exposed to precipitation, including fueling stations, vehicle and equipment maintenance and/or cleaning areas, etc.
- locations of storm water outfalls and outline of areas draining to such outfalls
- location and description of non-storm water discharges
- location of activities exposed to precipitation to include processing and storage areas, access roads, etc.
- location and source of runoff from adjacent property containing significant quantities of pollutants of concern.
- ***Receiving waters and wetlands***
- ***Summary of potential pollutant sources***
- ***Areas of spills and leaks during prior three-year period***
- ***Summary of sampling data***
- ***Storm water controls*** to include a description of existing and planned BMPs.

These items are detailed in Section 4.2 of the MSGP-2000, which covers the general requirements for a SWPPP. In addition, the MSGP contains sector-specific SWPPP requirements which are found in Section 6 of the MSGP. The NPDES Industrial Storm Water Worksheet found in Appendix P also lists these items. Finally, a State General Permit may contain additional items. The inspector must have the applicable State general permit for storm water discharges associated with industrial activities.

NOTE: As defined in 40 CFR 122.26(b)(12), significant materials include, but are not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under CFR Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); any chemical the facility is required to report pursuant to Section 313 of Title III of Superfund Amendments and Reauthorization Act (SARA); fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with storm water discharges.

The SWPPP may incorporate or may be incorporated into other plans that the facility prepared for other permits or programs including Spill Prevention Control and Countermeasure (SPCC) Plans, or BMP Programs.

Additional Requirements for EPCRA 313 Facilities

The MSGP also includes special requirements for facilities subject to reporting requirements under Emergency Planning and Community Right-to-Know (EPCRA) (also known as Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986). Potential pollutant sources for which the facility has reporting requirements under EPCRA 313 must be identified in the summary of potential pollutant sources in the facility's SWPPP.

SWPPP Implementation/In the Field

In the field, the inspector should verify that the map and description of potential pollutant sources in the SWPPP reflect current conditions. In addition, the inspector should verify that measures and controls described in the SWPPP, are being implemented as described in the SWPPP. These measures and controls will include items such as:

- Good housekeeping or upkeep of industrial areas exposed to storm water
- Preventive maintenance of storm water controls and other facility equipment
- Spill prevention and response procedures to minimize the potential for and the impact of spills
- Inspections of areas where industrial materials or activities are exposed to storm water, including evaluation of existing BMPs
- Employee training on pollution prevention measures and controls and recordkeeping (described in detail below).

The MSGP may also require that facilities:

- Identify areas with a high potential for erosion and the stabilization measures or structural controls to be used to limit erosion in these areas
- Implement traditional storm water management measures (e.g., oil/water separators, vegetative swales, detention ponds) where they are appropriate for the site.

Implementation of SWPPPs requires facilities to implement BMPs and train employees on how to carry out the goals of the SWPPP. The inspector should evaluate any implementation schedules developed by the facility for carrying out the SWPPP (e.g., deadlines for putting improved housekeeping measures into practice). The inspector should also determine whether appropriate individuals have been assigned to implement the specific aspects of the SWPPP and whether these individuals are aware of the requirements of that designation. If the SWPPP requires installation of structural controls, the inspector should verify that the controls are in place and in good working order or that the facility is on an appropriate schedule for construction of the structural control measures. The inspector should also ensure that management approves of the implementation schedule and strategy and is aware of the SWPPP process.

In addition, employee training on the components and goals of the Storm Water Pollution Prevention Plan must be performed at all levels of responsibility. The inspector should verify that there are training programs and that the training focuses on spill prevention and response, good housekeeping practices, materials management, and also, how to do inspections and monitoring.

Specific inspector questions, that may be appropriate at a given industrial site, are contained in the NPDES Industrial Storm Water Worksheet found in Appendix P. Site-specific Best Management Practices (BMPs) for industrial activities are summarized in Figure 11-2.

Monitoring (including Self-Inspections)

Self-Inspections

The SWPPP must have provisions for two tiers of inspections to be performed by the facility. The first tier consists of quarterly visual examination of storm water discharges, looking for indications of storm water pollutants in the discharge. Quarterly visual monitoring is intended to determine the need for maintenance, good housekeeping, or other BMPs. The second tier of inspection is the comprehensive site evaluation, which requires qualified personnel to:

- Look for evidence of pollutants entering the drainage system
- Evaluate the performance of pollution prevention measures
- Identify areas where the SWPPP should be revised to reduce the discharge of pollutants
- Document both the routine inspections and the annual site evaluation in a report.

The compliance site evaluation can be done less frequently than the routine inspection (but not less than once per year). The inspector should verify that documentation of both the routine inspections and the comprehensive site compliance evaluation is included in the SWPPP.

Monitoring Requirements

There are several distinct categories of monitoring requirements and numeric effluent limitations that the facility may be subject to under the MSGP-2000: (1) monitoring for numeric limitation, (2) benchmark monitoring, (3) biannual monitoring for metal mining facilities, and (4) specific monitoring by a State, Tribe, or Territory. The monitoring requirements and numeric limitations applicable to the facility depend on a number of factors including (1) the types of industrial activities generating storm water runoff from the facility, and (2) the State or Tribe where the facility is located. Depending on the facility's sector (identified in MSGP Section 1.2.1), different monitoring requirements and numeric limitations apply. The MSGP-2000 established monitoring requirements only for certain classes of industrial sites. These requirements are based on analysis of the types of pollutants potentially discharged from the different industrial sectors. State NPDES permitting authorities are authorized to include more stringent monitoring conditions; therefore, the inspector should review the facility's permit to identify the site-specific requirements.

For specific monitoring requirements, the inspector should review EPA's most current MSGP (where applicable), the State NPDES permit, or the facility-specific individual permit. The permit will contain specific conditions as to the sample type, location, frequency, as well as the specific parameters that must be analyzed. If it is necessary for the inspector to collect samples, the inspector should refer to Chapter Five of this manual and to EPA's *Guidance Manual for the Monitoring and Reporting Requirements of the NPDES Storm Water Multi-Sector General Permit*, EPA 833-B-99-001, January 1999 for specific details on sampling and analyses.

Table 11-4

SIC Codes Regulated for Storm Water Discharges

| SIC | Description |
|---|--|
| MINING | |
| 10 | Metal mining |
| 12 | Coal mining |
| 13 | Oil and gas extraction |
| 14 | Mining and quarrying or nonmetallic minerals, except fuels |
| MANUFACTURING | |
| 20 | Food and kindred products |
| 21 | Tobacco products |
| 22 | Textile mill products |
| 23 | Apparel and other finished products made from fabrics and similar materials |
| 24 | Lumber and wood products, except furniture |
| 2434 | Wood kitchen cabinets |
| 25 | Furniture and fixtures |
| 26 | Paper and allied products |
| 265 | Paperboard containers and boxes |
| 267 | Converted paper and paperboard products, except containers and boxes |
| 27 | Printing, publishing, and allied industries |
| 28 | Chemicals and allied products |
| 283 | Drugs |
| 285 | Paints, varnishes, lacquers, enamels, and allied products |
| 29 | Petroleum refining and related industries |
| 30 | Rubber and miscellaneous plastic products |
| 31 | Leather and leather products |
| 311 | Leather tanning and finishing |
| 32 | Stone, clay, glass, and concrete products |
| 323 | Glass products, made of purchased glass |
| 33 | Primary metals industry |
| 34 | Fabricated metal products, except machinery and transportation equipment |
| 3441 | Fabricated structural metal |
| 35 | Industrial and commercial machinery and computer equipment |
| 36 | Electronic and other electrical equipment and components, except computer equipment |
| 37 | Transportation equipment |
| 373 | Ship and boat building and repairing |
| 38 | Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks |
| 39 | Miscellaneous manufacturing industries |
| TRANSPORTATION, COMMUNICATIONS, ETC. | |
| 40 | Railroad transportation |
| 41 | Local and suburban transit and interurban highway passenger transportation |
| 42 | Motor freight transportation and warehousing |
| 4221 | Farm product warehousing and storage |
| 4222 | Refrigerated warehousing and storage |
| 4225 | General warehousing and storage |
| 43 | United States Postal Service |
| 44 | Water transportation |
| 45 | Transportation by air |
| WHOLESALE TRADE | |
| 50 | Wholesale trade - durable goods |
| 5015 | Motor vehicle parts, used |
| 5093 | Scrap and waste material |
| 51 | Wholesale trade - nondurable goods |
| 5171 | Petroleum bulk stations and terminals |

Figure 11-1**Industrial Categories Associated With Industrial Activity**

The eleven categories engaging in industrial activity are described below. Descriptions of Standard Industrial Classification [SIC] codes applicable to the storm water regulations are provided in Table 11-4.

- (i) Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under 40 CFR subchapter N (except facilities with toxic pollutant effluent standards which are exempted under category (xi) below;
- (ii) Facilities classified as SIC 24 (except 2434), 26 (except 265 and 267), 28 (except 283), 29, 311, 32 (except 323), 33, 3441, and 373;
- (iii) Facilities classified as SIC 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under 40 CFR 434.11(l) because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations which have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; (inactive mining operations are mining sites that are not being actively mined, but which have an identifiable owner/operator; inactive mining sites do not include sites where mining claims are being maintained prior to disturbances associated with the extraction, beneficiation, or processing of mined materials, nor sites where minimal activities are undertaken for the sole purpose of maintaining a mineral claim);
- (iv) Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under subtitle C of RCRA;
- (v) Landfills, land application sites, and open dumps that receive or have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under subtitle D of RCRA;
- (vi) Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but not limited to those classified as SIC 5015 and 5093;
- (vii) Steam electric power generating facilities, including coal handling sites;

Figure 11-1**Industrial Categories Associated With Industrial Activity****(Continued)**

- (viii) Transportation facilities classified as SIC 40, 41, 42 (except 4221-25), 43, 44, 45, and 5171 which have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or which are otherwise identified under paragraphs (i)-(vii) or (ix)-(xi) of this section are associated with industrial activity;
- (ix) Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 million gallons a day (mgd) or more, or required to have an approved pretreatment program under 40 CFR Part 403. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with section 405 of the CWA;
- (x) Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than five acres of total land area which are not part of a larger common plan of development or sale;
- (xi) Facilities under SIC 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-4225, (and which are not otherwise included within categories (i)-(x)).

Figure 11-2**Site-Specific Industrial Storm Water BMPs**

Flow Diversion Practices: Flow diversion is practiced to channel storm water away from industrial activities to prevent storm water contact with industrial pollutants. Additionally, flow diversion may be used to channel polluted storm water directly to a treatment facility.

Flow diversion practices include storm water conveyances (e.g., channels, gutters, drains, and sewers), diversion dikes, and graded areas and pavement.

Exposure Minimization Practices: Exposure minimization is practiced to eliminate or minimize the contact of storm water with industrial activities and its pollutants. If contact of storm water with pollutants is minimized, the costs of collecting and treating storm water and the environmental releases that occur will be reduced.

Exposure minimization practices include containment diking, curbing, drip pans, collection basins, sumps, covering, vehicle positioning, and loading and unloading by air pressure or vacuum.

Mitigative Practices: Mitigation is practiced to clean up or recover a substance (i.e., potential pollutant) before it comes in contact with storm water. Mitigation is a second step after pollution prevention.

Mitigative practices include sweeping, shoveling, excavation practices, vacuum and pump systems, sorbents, and gelling agents.

Other Preventative Practices: Other preventative practices can be taken to limit/prevent the exposure of storm water to industrial activities. These practices may be either structural or procedural measures taken to reduce/eliminate exposure.

Other preventative practices include preventative monitoring practices, dust control (land disturbances and demolition areas), dust control (industrial activities), signs and labels, security, area control procedures, and vehicle washing.

Sediment and Erosion Prevention Practices: Sediment and erosion prevention can be accomplished using seven general practices: vegetate the site, minimize soil exposure to storm water, keep runoff from disturbed areas, stabilize disturbed soils, slow down runoff, provide drainage ways for runoff, and remove sediment from the runoff before it leaves the site.

Sediment and erosion prevention practices include vegetative practices, structural erosion prevention, and sediment control practices.

Infiltration Practices: Infiltration practices are measures that increase the infiltration of storm water runoff into the ground through the use of very porous soils. Infiltration practices may also reduce the velocity of storm water, thereby minimizing erosion potential of the runoff.

Infiltration practices include vegetated filter strips, grassed swales, level spreaders, infiltration trenches, and porous pavements/concrete grids and modular pavements.

11. C. Storm Water Discharges Associated with Construction Activity

Applicability (Who is Covered)

Construction activity plays a major role in the degradation of water quality. Construction activities are a major contributor of sediment discharges to our rivers, streams, and wetlands. In the 1998 National Water Quality Inventory, States reported that siltation is the largest cause of impaired water quality in rivers and streams and the third largest cause of impairment in lakes. Sediment-laden discharges can result in aquatic habitat destruction, and detrimental changes to hydrologic patterns, including increased natural stream flows and excessive flooding. Total suspended solids (TSS) concentrations from uncontrolled construction sites have been found to be more than 150 times greater than the concentration from undeveloped land.

Large Construction Activity

As mentioned earlier, the Phase I Rule identifies eleven categories of industrial activity in the definition of “storm water discharge associated with industrial activity” that must obtain an NPDES storm water discharge permit (see Section 11.B). Category (x) of this definition includes construction activity (including clearing, grading, and excavation) that results in a total land disturbance of 5 acres or greater.

Disturbance of less than 5 acres are also regulated under category (x) if they are part of a “larger common plan of development or sale” with a planned disturbance of 5 acres or greater. Phase I construction activity is commonly referred to as “large” construction activity. The Phase I rule requires all operators of large construction activity to obtain a NPDES storm water discharge permit before discharging storm water runoff to a municipal separate storm sewer system or waters of the United States, unless covered by the United States Army Corps of Engineers 404 permit.

Construction activities can include road building, construction of residential houses, office buildings, industrial sites, or demolition.

Land Disturbance means exposed soil due to clearing, grading, or excavation activities.

Larger common plan of development or sale describes a situation in which multiple construction activities occurs on a contiguous area.

An operator is the person or persons that has either operational control of construction project plans and specifications, or day-to-day operational control of activities necessary to ensure compliance with storm water permit conditions.

Small Construction Activity

In 1992, the Court of Appeals for the Ninth Circuit remanded for further proceedings the portion of EPA’s Phase I storm water regulation related to category (x) construction activity (*NRDC v. EPA*, 966 F.2d) (9thCir. 1992). EPA responded to the court’s decision by designating under Phase II storm water discharges from construction site activities that ultimately will result in a

land disturbance of equal to or greater than 1 and less than 5 acres as “storm water discharges associated with small construction activity” (see 40 *CFR* 122.26(b)(15)). The Phase II rule specifies all operators of small construction must be covered under an NPDES storm water discharge permit by March 10, 2003 before discharging storm water runoff to a municipal separate storm sewer system or waters of the United States after that date.

Construction activities disturbing less than 1 acre are also included in Phase II of the NPDES storm water program if they are part of a larger common plan of development or sale with a planned disturbance of equal to or greater than 1 acre and less than 5 acres, or if they are designated by the NPDES permitting authority. The NPDES permitting authority or EPA may designate construction activities disturbing less than 1 acre based on potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the United States.

Small Construction Waivers

Small construction activity does not require permit coverage where the construction operator can certify one of two waivers. Small construction activities disturbing less than 1 acre that are designated by the permitting authority are not eligible for these waivers. Under the Phase II Rule, NPDES permitting authorities have the option of providing a waiver from Phase II coverage and requirements to operators of small construction activity who certify to one of two conditions:

- (1) Low predicted rainfall potential (i.e., activity occurs during a negligible rainfall period), where the rainfall erosivity factor (“R” in the Revised Universal Soil Loss Equation [RUSLE]) would be less than 5 during the period of construction activities; or
- (2) A determination that storm water controls are not necessary based on either:
 - (A) A “total maximum daily load” (TMDL) that address the pollutant(s) of concern¹ for construction activities; or
 - (B) An equivalent analysis for non-impaired waters that determines allocations are not needed to protect water quality based on consideration of instream concentrations, expected growth in pollutant concentrations from all sources, and a margin of safety.

In order to qualify for the Rainfall Erosivity Factor Waiver, the construction site operator must determine the value of the rainfall erosivity factor - R factor in the RUSLE and then certify to the permitting authority that the factor is less than 5 during the period of construction. A construction site operator will need site-specific data to calculate the values for rainfall erosivity using RUSLE. Calculations may also be made online by going to that waiver section at: <http://www.epa.gov/npdes/stormwater/cgp.cfm>.

In order to qualify for the Water Quality Waiver, the operator of the construction site would need to certify that the facility’s construction activity will take place, and the storm water discharges

¹Pollutants of concern include sediment or a parameter that addresses sediment (such as total suspended solids, turbidity, or siltation) and any other pollutant that has been identified as a cause of impairment of a receiving waterbody.

will occur, within the area covered by the TMDLs or equivalent analysis. A certification form is provided by EPA and would likely be provided by the NPDES permitting authority.

Inspector should verify that the construction project qualifies for a waiver.

Permit Applications for Storm Water Discharges Associated With Construction Activity

Operators of both small and large construction activities must obtain coverage under a NPDES construction storm water permit. Where EPA is the NPDES permitting authority, the Construction General Permits (CGP) are the only permit option available. In areas where EPA is not the NPDES permitting authority, other types of construction storm water permits may be required, so it is important to check with the appropriate NPDES permitting authority. Many State NPDES permitting authorities have issued general permits for construction activities. State construction general permits will also be referred to as CGPs through-out the chapter. See www.cicacenter.org/swp2.html for list of state General Permits.

General Permit/Notice of Intent

As stated above, the CGP is the only general permit available to operators of large construction activities in areas where EPA is the NPDES permitting authority. The CGP for areas where EPA is the permitting authority is published in the *Federal Register*. Much like the industrial facilities that apply for general permits, operators of construction sites that apply for permit coverage under the CGP are required to complete, certify, and submit to the appropriate NPDES permitting authority a Notice of Intent (NOI) Form. The NOI requests a variety of information, including information related to the Endangered Species Act (similar to what is described in the Permit Applications for Storm Water Discharges Associated with Industrial Activity section of this chapter). In order to discontinue permit coverage, an operator of a construction activity must complete and submit to the appropriate NPDES permitting authority a Notice of Termination (NOT) Form upon satisfying the appropriate permit conditions described in the CGP. This permit presents operators with all requirements up front, allowing facility operators to become familiar with, and prepare for, activities such as storm water pollution prevention plan implementation and regular inspections, prior to applying for permit coverage. The key component of the CGP is the development and implementation of a construction storm water pollution prevention plan (SWPPP). For sites with multiple operators, EPA encourages these operators to develop one comprehensive SWPPP with specific requirements for each operator identified. Some of the other requirements include conducting regular inspections and reporting releases of reportable quantities of hazardous substances. Operators must also comply with local, State, or Tribal construction runoff control programs.

NOIs must be submitted in the time frame specified in the applicable general permit (e.g., at least 7 days prior to commencement of construction.) Electronic filing of NOI's (E-NOI) is now available for non-authorized states see <http://cfpub.epa.gov/npdes/stormwater/enoi.cfm>.

EPA's regulations allow permitting authorities to authorize discharges under general permit for small construction sites without submitting an NOI where the permitting authority finds that NOIs would be inappropriate. While EPA does not currently implement this allowance, some states have opted to regulate small construction that way (i.e. no NOI required).

Individual Permit (Phase II and Phase I)

In the event that an operator of a small construction activity chooses to apply for an individual permit, or if the NPDES permitting authorities denies coverage under general permits and requires the operator to submit an individual NPDES permit application (based on information such as water quality data), or if any of the discharges of storm water associated with small construction activity identified in 40 CFR 122.26(b)(15) that are not authorized by the general permit, the operator is subject to the individual application requirements found at CFR122.26(c)(1)(ii).

Establishing Eligibility

Endangered Species Act

EPA's NOI requires certification that the construction activity will not impact endangered or threatened species protected under the Endangered Species Act (ESA). As mentioned above, this NPDES certification requirement is unique to EPA's NOI. All dischargers applying for coverage must include in the application information on the NOI form: (1) whether listed species are in proximity to the storm water or allowable non-storm water discharges or discharge-related activity; (2) under which option of the CGP they claim eligibility for permit coverage, and (3) certification that their storm water and allowable non-storm water discharges and discharge related activities are not likely to jeopardize listed species, or are otherwise eligible for coverage due to a previous authorization under the ESA. The permittee should consult with applicable state Fish and Wildlife service and National Marine Fisheries Service offices to make these determinations of eligibility.

Storm Water Pollution Prevention Plan Requirements

The Storm Water Pollution Prevention Plan as required in the CGP must be prepared prior to submission of the NOI. The construction project must comply with the provisions of the SWPPP throughout the construction period and must be signed by a responsible official such as the president, vice president, or general partner. The construction facility must keep the SWPPP on-site throughout the entire construction period. The SWPPP must be submitted for review only when requested by EPA, although some permitting authorities may require submission at the SWPPP along with the NOI.

For large or complex construction sites the inspector should request a copy of the SWPPP prior to inspection to ensure familiarity with the site during the inspection. This may not always be possible where we want to ensure there is no advance notice of an inspection. Otherwise, the inspector will obtain a copy of and review the SWPPP or at least parts of the SWPPP during the inspection. At a minimum, the inspector will need to review the site map prior to conducting the field inspection to understand the site and the existing/planned storm water controls. Depending on the time available for the inspection and the size of the SWPPP, the inspector may need to complete the remaining portion of the SWPPP review when he or she return to the office.

In reviewing the SWPPP, the inspector must evaluate if it contains all of the required elements specified in the permit (either the most current EPA CGP, the applicable State permit in NPDES-authorized States, or an individual permit issued to the site). The CGP requires that the SWPPP identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges and describe and ensure implementation of practices which the operator will use to reduce the pollutants in its storm water discharges. (Reviewing the SWPPP implementation is covered in the next section.) The following items are required typically in the SWPPP:

- A description of the nature of the construction activity
- A sequence (schedule) of major construction activity
- An estimate of the total area of the site and of the area to be disturbed
- Any existing data on the quality of storm water discharge from the site
- The name of the receiving water
- Any information on the type of soils at the site
- A site map indicating drainage patterns and slopes after grading activities are complete, areas of soil disturbance, areas which will not be disturbed, the location of stabilization measures and structural and non-structural controls, locations of offsite material, waste, borrow, equipment storage areas, and surface waters at the discharge outfalls
- Location and description of any discharge associated with industrial activity other than construction
- Copy of permit requirements
- Information on listed endangered or threatened species or critical habitat in proximity to site
- Measures and controls to prevent or minimize pollution of storm water.

Typically, measures and controls must include the following three (3) types:

(1) Erosion and Sediment Controls

Construction phase erosion and sediment controls should be designed to retain sediment onsite to the extent practicable and all control measures must be selected, installed, and maintained in accordance with manufacturer's specifications and good engineering practices. In addition, practices must be included for interim and permanent stabilization for the site, including a schedule of when the practices will be implemented. When construction activities temporarily or permanently cease on a portion of the site, stabilization measures must be initiated by the 14th day for erosion control. However, if the site will be redisturbed within 21 days this requirement is waived.

A site with more than 10 disturbed acres of common drainage must provide a temporary/permanent sediment basin with 3,600 cubic feet of storage per acre drained. When a sediment basin is not attainable, the SWPPP should identify all equivalent sediment controls.

The SWPPP must include a description of structural practices to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable.

(2) Storm Water Management

The permittee must consider installing measures (storm water detention structures, infiltration measures, etc.) to control pollutants after construction is complete (i.e., post-construction). Velocity dissipation devices must be installed in outfall channels to prevent erosion.

(3) Other Controls

The SWPPP must ensure that construction waste is not carried by storm water into the receiving waters. Measures must be taken to prevent construction vehicles from tracking soil off the construction site and to reduce the dust generation at the construction site. The operator must comply with State and/or local sanitary sewer or septic system regulations.

Where State and local programs for sediment and erosion control, storm water management, or site permits exist, the operator must certify that the SWPPP reflects and is in compliance with the requirements of the applicable State or local program.

This SWPPP must also specify that operator personnel must inspect the construction site at least once every 7 days or at least every 14 days and within 24 hours of a rainfall of 0.5 inches or more. Areas with sites that have been finally stabilized or sites that are located in arid (i.e., less than 10 inches of rain per year) or semi-arid (10 to 20 inches of rain per year) areas must be inspected at least once a month. The inspector must prepare a report documenting his/her findings on the conditions of the controls and stabilized areas. The inspector should verify that documentation of the routine inspections is included in the SWPPP.

The worksheet provided in Appendix R can be use to evaluate specific elements of the Storm Water Pollution Prevention Plan for construction activities.

SWPPP Implementation/In the Field

Are They Doing What The SWPPP Indicates?

When conducting the field inspection of a construction site, inspector should note several items:

- The opening conference with the owner/operator is extremely important. Often at larger residential construction sites, there will be multiple builders side-by-side with no delineation between them but each one of them is responsible for one or more aspects of SWPPP implementation. It is also important to identify the permittee and or co-permittees and their respective responsibilities under the permit. In some cases, the permittee is the developer who then passes along responsibility for aspects of the SWPPP implementation to the individual builders.
- It is absolutely necessary to review the site map before conducting the inspection because if the inspector does not know the site boundaries, it is difficult to identify and evaluate the runoff potential.
- Review construction sequence and BMP sequence given in the SWPPP - verify that these have been met.
- The closing conference provides an opportunity to describe deficiencies found and identify areas of concern (e.g., parts of a SWPPP missing; inspections not being done; silt fence not installed; discharge to a storm drain, etc...). Given the transient nature of most construction sites it is important to share information with the site owner/operator as quickly as possible (e.g., prior to issuance of final inspection report) so that any environmental harm can be minimized.

In the field, the inspector should verify that the description of potential pollutant sources in the SWPPP reflects current conditions. In addition, the inspector should verify that measures and controls described in the SWPPP are being implemented as described in the SWPPP.

Implementation of SWPPPs require facilities to implement BMPs and train employees on how to carry out the goals of the SWPPP. The inspector should evaluate any implementation schedules developed by the facility for carrying out the SWPPP (e.g., deadlines for putting improved housekeeping measures into practice). The inspector should also determine whether appropriate individuals have been assigned to implement the specific aspects of the SWPPP and whether these individuals are aware of the requirements of that designation. If the SWPPP calls for the installation of structural controls, the inspector should verify that the controls are in place and in good working order or that the facility is on an appropriate schedule for construction of the structural control measures. The inspector should also ensure that management approves of the implementation schedule and strategy and is aware of the SWPPP process.

An example of problems that an inspector may observe during a construction site inspection includes:

- Failure to self-inspect
- Silt fences improperly located, falling over, or ripped so that the fence is not functioning properly
- Poor housekeeping: oil stains on soil; over turned drums, uncovered pails containing liquids; cluttered equipment storage with leaking fluids; fuel tanks with no containment

- Storm drain inlets: covered with sediment/debris; ruptured gravel bags with loss of gravel into drain; no protection
- Trackout pads: filled with soil and not effective; dirt on roads.
- No cement washout

A worksheet that can help guide the inspector through the field inspection is presented in Appendix R. Site-specific BMPs for construction activities are summarized in Figure 11-3.

Figure 11-3**Site-Specific Construction Storm Water BMPs**

Stabilization Practices: Stabilization is practiced to control erosion due to unvegetated areas. Stabilization reduces erosion potential in four ways: (1) by shielding the soil surface from direct erosive impact of raindrops, (2) by improving the soil's water storage porosity and capacity, (3) by slowing the runoff and allowing the sediment to drop out or deposit; and (4) by physically holding the soil in place with plant roots. Vegetative (e.g., grasses, trees, or shrubs) covers are the most common type of stabilization.

Stabilization practices include temporary seeding, mulching, geotextiles, chemical stabilization, permanent seeding and planting, buffer zones, preservation of natural vegetation, sod stabilization, stream bank stabilization, soil retaining measures, and dust control.

Structural Erosion and Sediment Control Practices: Structural erosion and sediment control diverts storm water flows away from exposed areas, conveys runoff, prevents sediments from moving offsite, and reduces the erosive forces of runoff waters.

Structural erosion and sediment control practices include earth dikes, drainage swales, interceptor dikes and swales, temporary stream crossing, temporary storm drain diversion, pipe slope drains, subsurface drains, silt fence, gravel or stone filter berm, storm drain inlet protection, sediment trap, temporary sediment basin, outlet protection, check dams, surface roughening, and gradient terraces.

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11. D. Storm Water Discharges From Municipal Separate Storm Sewer Systems

Applicability (Who is Covered)

In addition to regulating discharges from the 11 categories of sites with industrial activities, the storm water program regulates discharges from municipal separate storm sewer systems (MS4s).

The November 16, 1990, regulations identify a two-part storm water permit application process for medium (serving a population of 100,000 or more, but fewer than 250,000) and large (serving a population of more than 250,000) MS4s in 40 *CFR* 122.26(d), pursuant to 402(p)(2)(C)-(D) of the CWA. The regulations identify 220 cities and counties that meet this requirement (and allow for case-by-case designations of other municipal storm sewers to be included in these systems). In addition to the designated counties and cities, other entities may be regulated such as Departments of Transportation or flood control districts. To date, a total of approximately 1,000 entities (cities, counties, DOTs, etc.) are covered under 270 permits nationwide. Part 1 applications for municipal storm sewer systems were due to EPA on November 18, 1991, (large systems) and May 18, 1992 (medium systems). Part 2 applications for these permittees were due to EPA on November 16, 1992, (large systems) and May 17, 1993 (medium systems). No new medium or large MS4s will be permitted under the Phase I requirements. All future MS4s are to obtain permit coverage under the Phase II regulations.

The Phase II Final Rule, published in the Federal Register on December 8, 1999, requires NPDES permit coverage for storm water discharges from certain regulated small MS4s. Only a select subset of small MS4s, referred to as regulated small MS4s, require an NPDES storm water permit. Small MS4s are defined as any MS4 that is not a medium or large MS4 covered by Phase I of the NPDES Storm Water Program. Regulated small MS4s are defined as all small MS4s located in "urbanized areas" (UAs) as defined by the Bureau of the Census, and those small MS4s located outside of a UA that are designated by NPDES permitting authorities. A small MS4 can be designated by the permitting authority as a regulated small MS4 in one of two ways. One, the small MS4 located outside of a UA is designated as a regulated small MS4 by the NPDES permitting authority because its discharges cause, or have the potential to cause, an adverse impact on water quality. Two, the small MS4 located outside of a UA contributes substantially to the pollutant loadings of a *physically interconnected* MS4 regulated by the NPDES storm water program. Note: The NPDES permitting authority was required to designate small MS4s meeting the designation criteria by December 9, 2002, or by December 8, 2004, if a watershed plan is in place.

Waivers

Permitting authorities may waive "automatically designated" Phase II dischargers if the dischargers meet the necessary criteria. Two waiver options are available to operators of automatically designated small MS4s if discharges do not cause, or have the potential to cause water quality impairment. Note: the waivers are granted by the NPDES authority. The operator

of the regulated small MS4 cannot determine that the facility meets the waiver criteria. If the permitting authority is not proactive in assessing small MS4s for potential waivers, an operator may petition for a waiver assessment. If a permitting authority decides to grant waivers, it must have done so by December 9, 2002, to coincide with the expected issuance of the small MS4 general permit. If the permit authority chooses to phase in permit coverage based on a comprehensive watershed plan, then regulated small MS4s may be waived on the same schedule. The phase-in of permit coverage and waivers is to be completed no later than March 8, 2007.

The first waiver option applies where:

- (1) the jurisdiction served by the system is less than 1,000 people;
- (2) the system is not contributing substantially to the pollutant loadings of a physically interconnected regulated MS4; and
- (3) if the small MS4 discharges any pollutants identified as a cause of impairment of any water body to which it discharges, storm water controls are not needed based on wasteload allocations that are part of an EPA approved or established "total maximum daily load" TMDL that addresses the pollutant(s) of concern.

The third criterion of this waiver option need only be met if the small MS4 is discharging into a impaired water body and the discharge contains a pollutant or pollutants cause the impairment (i.e., the "pollutants of concern").

The second waiver option applies where:

- (1) the jurisdiction served by the system is less than 10,000 people;
- (2) an evaluation of all waters of the U.S. that receive a discharge from the system shows that storm water controls are not needed based on wasteload allocations that are part of the EPA approved or established TMDL that addresses the pollutant(s) of concern or an equivalent analysis; and
- (3) it is determined that future discharges from the small MS4 do not have the potential to result in exceedences of water quality standards.

The NPDES permitting authority is required to periodically review any waivers granted to MS4 operators to determine whether any information required for granting the waiver has changed. Minimally, such a review needs to be conducted once every five years.

Permit Applications for Storm Water Discharges From Municipal Separate Storm Sewer Systems

Permits must be obtained for all discharges from large, medium, and regulated small municipal separate storm sewer systems (and designated others as determined on a case-by-case basis). The permitting authority may issue one system-wide permit covering all discharges from

municipal separate storm sewer systems or issue distinct permits for appropriate categories of discharges. Also, the permitting authority may issue permits for other municipal separate storm sewer systems on a system-wide or categorical basis. EPA did not develop baseline general permits for storm water discharges from municipal separate storm sewer systems, because of the differing nature of discharges from municipal separate storm sewer systems in different parts of the country and the varying water quality impacts of municipal storm sewer discharges on receiving waters. Based on permit application requirements, these permits will likely address applicability, legal authority, source identification, discharge characterization, management programs, control and impact assessments, and financial commitments. In many instances, these permits will be unique to the individual permittee; therefore, a definitive discussion of the permit requirements for the municipal separate storm sewer system permittees is not possible.

Unlike the Phase I program that primarily utilizes individual permits for medium and large MS4s, the Phase II approach allows operators of regulated small MS4s to choose from as many as three permitting options: (1) general permits, (2) individual permits, or (3) modification of an existing Phase I Individual Permit (Co-Permittee Option). It must be noted that the NPDES permitting authority reserves the authority to determine which options are available to the regulated small MS4s. Operators of “automatically designated” regulated small MS4s in urbanized areas submit their Notices of Intent within 90 days of permit issuance. Operators of regulated small MS4s designated by the permitting authority must submit their permit applications within 180 days of notice. Full implementation of MS4's program is required within 5 years of permit issuance.

General permits for regulated small MS4s are strongly encouraged by EPA. The Phase II program has been designed specifically to accommodate a general permit approach. General permits prescribe one set of requirements for all applicable permittees. General permits are drafted by the NPDES permitting authority, then published for public comment before being finalized and issued. A NOI serves as the application for the general permit. The regulated small MS4 operator complies with the permit application requirements by submitting an NOI to the NPDES permitting authority that describes the storm water management program, including best management practices (BMPs) and measurable goals. The operator has the flexibility to develop an individualized storm water program that addresses the particular characteristics and needs of its system, provided the requirements of the general permit are satisfied. Permittees also can choose to share responsibilities for meeting the Phase II program requirements. Those entities choosing to do so may submit jointly with the other municipalities or governmental entities an NOI that identifies who will implement which minimum measures within the area served by the MS4.

Individual permits are required for Phase I medium and large MS4s, but not recommended by EPA for Phase II program implementation. Individual permits prescribe a particular set of requirements for a particular permittee or a group of co-permittees. Individual permits require the submission of a more comprehensive application than an NOI that is submitted under a general permit. Once the permit application is received, an individual permit is drafted by the NPDES permitting authority, then published for public comment before being finalized and issued. The Phase II rule allows a regulated small MS4 to submit an individual application for coverage under either the Phase II MS4 program (see 122.34) or the Phase I MS4 program (see 122.26(d)). For individual coverage under Phase II, the permittee must follow Phase II application requirements and provide an estimate of square mileage served by the system and any additional information requested by the NPDES permitting authority. The permittee electing to apply for coverage under Phase I program must follow the permit application requirements

detailed at 122.26(d). The NPDES permitting authority may allow more than one regulated entity to apply for an individual permit (i.e., co-permittees).

Two permitting options tailored to minimize duplication of effort can be incorporated into both the general permit and the individual permit by the NPDES permitting authority. First, the permitting authority can recognize in the permit that another governmental entity is responsible under an NPDES permit for implementing any or all minimum measures. Responsibility for implementation of the measure(s) would rest with the other governmental entity, thereby relieving the permittee of its responsibility to implement that particular measure(s). Second, the NPDES permitting authority can include conditions in a general permit that direct a permittee to follow the requirements of an existing qualifying local program rather than the requirements of a minimum measure. A qualifying local program is defined as a local, State, or Tribal municipal storm water program that imposes requirements that are equivalent to those of Phase II MS4 minimum measures. The permittee remains responsible for the implementation of the minimum measure through compliance with the qualifying local program.

The operator of a regulated small MS4 could participate as a limited co-permittee in a neighboring Phase I MS4's storm water management program by seeking a modification of the existing Phase I individual permit. A list of Phase I medium and large MS4s can be obtained from the EPA Office of Wastewater Management (OWM) or downloaded from the OWM, web site at <http://www.epa.gov/npdes>. The permittee must follow Phase I permit application requirements (with some exclusions). The permittee must comply with the applicable terms of the Phase I individual permit rather than the minimum control measures in the Phase II Final Rule.

A summary of the permit application deadlines is presented in Table 11-3. The Transportation Act of 1991 modified the application deadlines for industrial activities owned or operated by municipalities (i.e., types of industrial activities covered by MSGP). The Phase II Rule required industrial activities operated by municipalities with populations less than 100,000 to obtain permit coverage to no later than March 10, 2003, (unless the NPDES permitting authority chooses to phase-in permit coverage on a watershed basis and establishes other deadlines). As such, all industrial activities defined in 122.26(b)(14) are now required to obtain coverage, unless waived.

Storm Water Management Program (SWMP) Development

Phase I Completed as Part of the Permit Application

The storm water management program (SWMP) is considered to be the most important requirement of a MS4 permit. Existing structural and non-structural prevention and control measures on discharges from municipal separate storm sewers must be described in Part 1 of the permit application.

The discussion that follows provides a general discussion of SWMP requirements for MS4s. The inspector will have to review the facility's permit for specific considerations. Each MS4 covered by a permit must develop a SWMP, tailored to system-specific conditions and designed to control the amount of pollutants in storm water discharges from the system. The permitting authority has the right to review and request changes in the SWMP. Summaries of necessary components of these programs for MS4s are provided below for both large- and medium-size municipalities.

Management programs must describe priorities for implementing controls and should be based on the following four requirements:

1. Describe structural and source control measures to be implemented during the life of the permit to reduce pollutants from runoff from commercial and residential areas that is discharged from the MS4s. The description must be accompanied by an estimate of the expected reduction of pollutant loads and a proposed schedule for implementing such controls. At a minimum, the description should include:
 - Maintenance activities and a maintenance schedule for structural controls.
 - Planning procedures to develop, implement, and enforce controls to reduce discharges from areas of new development and significant redevelopment after construction is complete.
 - Practices for operating and maintaining public streets, roads, etc., and procedures for reducing the impact as a result of deicing activities.
 - Procedures to ensure that flood management projects assess the impacts on the water quality of receiving water bodies and that existing structural flood control devices have been evaluated if retrofitting is possible for additional pollutant removal.
 - Program to monitor pollutants in runoff from operating or closed municipal landfills or other treatment, storage, or disposal facilities for municipal waste, that identifies priorities and procedures for inspections and establishing and implementing control measures for such discharges.
 - Program to reduce to the MEP pollutants in discharges from the application of pesticides, herbicides, and fertilizers. This may include educational activities, permits, certifications, and other measures for commercial applicators and

distributors, and controls for application in public right-of-ways and at municipal facilities.

2. Describe programs, including a schedule, to detect and remove (or to require the discharger to the municipal separate storm sewer system to obtain a separate NPDES permit for) illicit discharges and improper disposal into the storm sewer. At a minimum, the proposed program should include:
 - Inspection procedures, to implement and enforce an ordinance, order, or similar means to prevent illicit discharges to the municipal separate storm sewer system
 - Procedures to conduct on-going field screening activities during the life of the permit
 - Procedures to be followed to investigate portions of the separate storm sewer system that indicate a reasonable potential of containing illicit discharges or other sources of non-storm water
 - Procedures to prevent, contain, and respond to spills that may discharge into the municipal separate storm sewer
 - Program to promote, publicize, and facilitate public reporting of the presence of illicit discharges or water quality impacts associated with discharges from MS4s
 - Educational activities, public information activities, and other appropriate activities to facilitate the proper management and disposal of used oil and toxic materials
 - Controls to limit infiltration of seepage from municipal sanitary sewers to MS4s.
3. Describe programs to monitor and control pollutants in storm water discharges to municipal systems from municipal landfills; hazardous waste treatment, disposal, and recovery facilities; industrial facilities that are subject to section 313 of SARA Title III; and industrial facilities that the municipal permit applicant determines are contributing a substantial loading to the MS4s. The program should include:
 - Priorities and procedures for inspections and establishing and implementing control measures for such discharges
 - Monitoring program for storm water discharges associated with industrial facilities identified in 3., to be implemented during the term of the permit, including the submission of quantitative data.
4. Describe programs to implement and maintain structural and non-structural best management practices to reduce pollutants in storm water runoff from construction sites to the municipal separate storm sewer system. This program should include:
 - Procedures for site planning that incorporate consideration of potential water quality impacts
 - Requirements for non-structural and structural best management practices

- Procedures for identifying priorities for inspecting sites and enforcing control measures that consider the nature of the construction activity, the topography, and the characteristics of soils and receiving water quality
- Appropriate educational and training measures for construction site operators.

Phase II Completed as Part of the Permit Application or Notice of Intent

The Phase II regulations require regulated small MS4s to develop SWMPs similar, but not identical, to those developed by medium/large MS4s. Consistent with the requirements for medium/large MS4 requirements, small MS4 permits require at a minimum that the permittee develop, implement, and enforce a SWMP designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. Slightly different from the Phase I requirements, the Phase II requirements for SWMPs include the six minimum control measures described below:

(1) Public education and outreach on storm water impacts that distribute educational materials to the community or conduct equivalent outreach activities about the impacts of storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff.

(2) Public involvement/participation on storm water controls, at a minimum, complying with State, Tribal and local public notice requirements.

(3) Illicit discharge detection and elimination program that includes:

- a storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls;
- an ordinance or other regulatory mechanism, that effectively prohibits non-storm water discharges into the storm sewer system
- appropriate enforcement procedures and actions;
- a plan to detect and address non-storm water discharges, including illegal dumping, to the system; and
- outreach that informs public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

(4) Construction site storm water runoff control program to reduce pollutants in any storm water runoff to your small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. The program must include the development and implementation of, at a minimum:

- an ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance;
- requirements for construction site operators to implement appropriate erosion and sediment control best management practices;
- requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;
- procedures for site plan review which incorporate consideration of potential water quality impacts;
- procedures for receipt and consideration of information submitted by the public, and
- procedures for site inspection and enforcement of control measures.

(5) Post-construction storm water management program in new development and redevelopment for projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4. The controls must include strategies which include a combination of structural and/or non-structural best management practices (BMPs) appropriate for the community; use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State, Tribal or local law; and ensure adequate long-term operation and maintenance of BMPs.

(6) Pollution prevention/good housekeeping for municipal operations that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations. Your program must include employee training to prevent and reduce storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.

As part of the small MS4 NOI submission to the permitting authority, the MS4 is required to submit the BMPs that will be implemented for each of the six minimum control measures listed above. In addition, the NOI must identify the measurable goals for each of the BMPs, including, as appropriate, the months and years in which the MS4 will take the required actions, including interim milestones and the frequency of the action. The NOI must also identify the person or persons responsible for implementing or coordinating the SWMP.

SWMP Implementation/In the Field

The inspector should verify that the storm water management program is being implemented as appropriate to meet the current circumstances in the municipality. Implementation of management programs requires facilities to implement a variety of control measures, programs, procedures, and training of various individuals on how to carry out the goals of the program. The inspector should evaluate any implementation schedules developed by the municipality for carrying out the program and determine whether appropriate individuals have been assigned to implement the specific aspects of the program and if these individuals are aware of the requirements of that designation. The inspector should evaluate the municipality's inspection and enforcement program for industrial facilities and construction sites. In addition, the inspector should verify whether the municipality's dry weather screening program is being implemented according to the permit schedule. If the program calls for the installation or maintenance of structural controls, the inspector should verify that the controls are in place and in good working order or that the facility is on an appropriate schedule for construction of the structural control measures.

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11. E. References

- API. August 1989. "Suggested Procedure for Development of Spill Prevention Control and Countermeasure Plans," American Petroleum Institute Bulletin D16, Second Edition.
- APWA. 1989. Urban Storm Water Management, Special Report No. 49. American Public Works Association Research Foundation.
- Arapahoe County. April 8, 1988. "Erosion Control Standards." prepared by Kiowa Engineering Corporation.
- Commonwealth of Pennsylvania. April 1990. Erosion and Sediment Pollution Control Program Manual, Pennsylvania Department of Environmental Resources, Bureau of Soil and Water Conservation.
- Commonwealth of Virginia. 1980. Virginia Erosion and Sediment Control Handbook, Virginia Department of Conservation and Historical Preservation, Division of Soil and Water Conservation, Second Edition.
- County of Fairfax. 1990 and 1987 Editions. "Check List For Erosion and Sediment Control Fairfax County, Virginia."
- MWCOG. July 1987. Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs," Department of Environmental Programs, Metropolitan Washington Council of Governments.
- Northern Virginia Planning District Commission. August 1987. BMP Handbook for the Occoquan Watershed, prepared for Occoquan Basin Nonpoint Pollution Management Program.
- Salt Institute. 1987. The Salt Storage Handbook, A Practical Guide for Storing and Handling Deicing Salt. Alexandria, Virginia.
- Santa Clara Valley Nonpoint Source Pollution Control Program. Automotive-Related Industries, BMPs for Industrial Sanitary Sewer Discharges and Storm Water Pollution Control.
- State of Maryland. April 1983. 1983 Maryland Standards and Specifications for Soil and Erosion and Sediment Control. Maryland Water Resources Administration, Soil Conservation Service, and State Soil Conservation Committee.
- State of North Carolina. September 1, 1988. Erosion and Sediment Control Planning and Design Manual. North Carolina Sedimentation Control Commission, Department of Natural Resources and Community Development, and Agricultural Extension Service.
- State of Wisconsin. June 1990. Wisconsin Construction Site Best Management Practice Handbook. Wisconsin Department of Natural Resources, Bureau of Water Resources Management, Nonpoint Source and Land Management Section.
- Thron, H. and O.J. Rogashewski. 1982. "Useful Tools for Cleaning Up." Hazardous Material & Spills Conference.

- U.S. Environmental Protection Agency. CZARA NPS Guidance.
- U.S. Environmental Protection Agency. December 1991. "Draft - A Current Assessment of Urban Best Management Practices. Techniques for Reducing Non-point Source Pollution in the Coastal Zone." EPA Office of Wetlands, Oceans and Watersheds, prepared by Metropolitan Washington Council of Governments.
- U.S. Environmental Protection Agency. June 26, 1991. "Draft Construction Site Storm Water Discharge Control, An Inventory of Current Practices." EPA Office of Water Enforcement and Permits, prepared by Kamber Engineering.
- U.S. Environmental Protection Agency. June 1987. "Draft Report on Best Management Practices for the Control of Storm Water From Urbanized Areas." Science Applications International Corporation.
- U.S. Environmental Protection Agency. April 20, 1990. "Draft Sediment and Erosion Control, An Inventory of Current Practices." EPA Office of Water Enforcement and Permits, prepared by Kamber Engineering.
- U.S. Environmental Protection Agency. April 1991. Guidance Manual for the Preparation of NPDES Permit Applications for Discharges Associated with Industrial Activity. EPA-505/8-91-002.
- U.S. Environmental Protection Agency. April 1991. Guidance Manual for the Preparation of NPDES Permit Applications for Discharges From Municipal Separate Storm Water Systems. EPA-505/8-91-003A.
- U.S. Environmental Protection Agency. January 1993. "Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems, A User's Guide. EPA/600/R-92/238.
- U.S. Environmental Protection Agency. December 1979. NPDES Best Management Practices Guidance Document. Industrial Environmental Research Laboratory, Cincinnati, Ohio, prepared by Hydrosience, Inc., EPA 600/9-79-0451.
- U.S. Environmental Protection Agency. March 1992. NPDES Storm Water Program Question and Answer Document. Office of Wastewater Enforcement and Compliance, Permits Division.
- U.S. Environmental Protection Agency. July 1993. NPDES Storm Water Program Question and Answer Document: Volume II. Office of Wastewater Enforcement and Compliance, Permits Division.
- U.S. Environmental Protection Agency. October 1989. Pollution Prevention in Printing and Allied Industries: Saving Money Through Pollution Prevention. Office of Research and Development, Pollution Prevention Office.
- U.S. Environmental Protection Agency. January 1992. Pollution Prevention Training Opportunities in 1992. EPA/560/8-92-002. (A comprehensive listing of pollution prevention resources, documents, courses, and programs, including names and phone numbers, is contained in a new annual EPA publication. Copies of this document may be obtained by calling the PPIC/PIES support number at (703) 821-4800.)

- U.S. Environmental Protection Agency. October 1973. Process, Procedure, and Methods to Control Pollution Resulting from All Construction Activity. EPA Office of Air and Water Programs, PB-257-318.
- U.S. Environmental Protection Agency. July 1991. Staff Analysis. Storm Water Section.
- U.S. Environmental Protection Agency. September 1992. Storm Water Management for Industrial Activities, Developing Pollution Prevention Plans and Best Management Practices. EPA-832-R-92-006.
- U.S. Environmental Protection Agency. September 1992. Storm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices. EPA-832-R-92-005.
- U.S. Environmental Protection Agency. July 1992. Storm Water Sampling Guidance Document. EPA 833-B-92-001.
- U.S. Environmental Protection Agency. July 1988. Waste Minimization Opportunity Assessment Manual. Hazardous Waste Engineering Research Laboratory.
- U.S. Environmental Protection Agency. September 1997. Checklist for No-Exposure certification for NPDES Stormwater Permitting.
- U.S. Environmental Protection Agency. February 1998. Guidance Manual for Implementing Storm Water Management Programs - Volume I - Planning and Administration. EPA 833-B-00-001.
- U.S. Environmental Protection Agency. January 1999. Guidance Manual for the Monitoring and Reporting Requirements of the NPDES Storm Water Multi-Sector General Permit. EPA 833-B-99-001.
- U.S. Environmental Protection Agency. September 1999. Storm Water Management Fact Sheet Internal Reporting. EPA 832-F-99-020.
- U.S. Environmental Protection Agency. September 1999. Storm Water Management Fact Sheet Materials Inventory. EPA 832-F-99-021.
- U.S. Environmental Protection Agency. September 1999. Storm Water Management Fact Sheet Non-Storm Water Discharges. EPA 832-F-99-022.
- U.S. Environmental Protection Agency. September 1999. Storm Water O&M Fact Sheet Preventative Maintenance. EPA 832-F-99-004.
- U.S. Environmental Protection Agency. September 1999. Storm Water Management Fact Sheet Record Keeping. EPA 832-F-99-005.
- U.S. Environmental Protection Agency. September 1999. Storm Water Management Fact Sheet Spill Prevention Planning. EPA 832-F-99-071.
- U.S. Environmental Protection Agency. September 1999. Storm Water Management Fact Sheet Storm Water Contamination Assessment. EPA 832-F-99-024.

- U.S. Environmental Protection Agency. September 1999. Storm Water Management Fact Sheet Dust Control. EPA 832-F-99-003.
- U.S. Environmental Protection Agency. September 1999. Storm Water Management Fact Sheet Coverings. EPA 832-F-99-009.
- U.S. Environmental Protection Agency. September 1999. Storm Water O&M Fact Sheet Catch Basin Cleaning. EPA 832-F-99-011.
- U.S. Environmental Protection Agency. September 1999. Storm Water Technology Fact Sheet Bioretention. EPA 832-F-99-012.
- U.S. Environmental Protection Agency. September 1999. Storm Water Technology Fact Sheet Flow Diversion. EPA 832-F-99-014.
- U.S. Environmental Protection Agency. September 1999. Storm Water Technology Fact Sheet Hydrodynamic Separators. EPA 832-F-99-017.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - An Overview. EPA 833-F-00-001.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - Conditional No Exposure Exclusion for Industrial Activity. EPA 833-F-00-015.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - Construction Site Runoff Control Minimum Control Measure. EPA 833-F-00-008.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - Illicit Discharge Detection and Elimination Minimum Control Measure. EPA 833-F-00-007.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - Low Rainfall Erosivity Waiver. EPA 833-F-00-014.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - Permitting and Reporting: The Process and Requirements. EPA 833-F-00-011.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - Pollution Prevention/Good Housekeeping Minimum Control Measure. EPA 833-F-00-010.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - Post Construction Runoff Control Minimum Control Measure. EPA 833-F-00-009.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - Public Participation/Involvement Minimum Control Measures. EPA 833-F-00-006.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - Small Construction Program Overview. EPA 833-F-00-013.
- U.S. Environmental Protection Agency. January 2000. Storm Water Phase II - Compliance Assistance Guide. EPA 833-R-00-002.

U.S. Environmental Protection Agency. January 2000. Guidance Manual for Conditional Exclusion from Storm Water Permitting Based On "No Exposure" of Industrial Activities to Storm Water. EPA 833-B-00-001.

U.S. Environmental Protection Agency. January 2000. Storm Water Phase II Final Rule - Small MS4 Storm Water Program Overview. EPA 833-F-00-002.

Washington State. January 23, 1992. "Draft Storm Water Management Manual for the Puget Sound Basin." Washington State Department of Ecology.

Washington State. July 29, 1991. "Standards for Storm Water Management for the Puget Sound Basin," Chapter 173-275 WAC. Washington State Department of Ecology.

Regulations/Notices

Federal Register (55 FR 47990). November 16, 1990. National Pollutant Discharge Elimination System (NPDES) Permit Application Requirements for Storm Water Discharges - Final Rule.

Federal Register (56 FR 12098). March 21, 1991. Application Deadline for Group Applications—Final Rule; Application Deadline for Individual Applications - Proposed Rule.

Federal Register (56 FR 40948). August 16, 1991. NPDES General Permits and Reporting Requirements for Storm Water Discharges Associated With Industrial Activity-Proposed Rule.

Federal Register (56 FR 50548). November 5, 1991. Application Deadline; Final Rule and Proposed Rule.

Federal Register (57 FR 11394). April 2, 1992. Application Deadlines, General Permit Requirements and Reporting Requirements-Final Rule.

Federal Register (57 FR 41176). September 9, 1992. Final NPDES General Permits for Storm Water Discharges from Construction Sites; Notice.

Federal Register (57 FR 44412). September 25, 1992. Final NPDES General Permits for Storm Water Discharges from Construction Sites; Notice.

Federal Register (57 FR 41236). September 9, 1992. Final NPDES General Permits for Storm Water Associated with Industrial Activity; Notice.

Federal Register (57 FR 44438). September 25, 1992. Final NPDES General Permits for Storm Water Associated with Industrial Activity; Notice.

Federal Register (57 FR 41344). September 9, 1992. National Pollutant Discharge Elimination System, Request for Comment on Alternative Approaches for Phase II Storm Water Program; Proposed Rule.

Federal Register (57 FR 60444). December 18, 1992. Permit Issuance and Permit Compliance Deadlines for Phase I Discharges; Final Rule.

Federal Register (58 FR 19427). April 14, 1993. NPDES General Permit for Storm Water Discharges Associated with Industrial Activity Located in the Commonwealth of Puerto Rico; Notice.

Federal Register (60 FR 50804). September 29, 1995. Final National Pollutant Discharge Elimination System Storm Water Multi-sector General Permit for Industrial Activities; Notice.

Federal Register (64 FR 68721). December 8, 1999. NPDES Regulations for Revision of the Water Pollution Control Program Addressing Storm Water Discharges; Final Rule.

Federal Register (65 FR 64746). October 30, 2000. Final Reissuance of National Pollutant Discharge Elimination System (NPDES) Storm Water Multi-Sector General Permit for Industrial Activities; Notice of Final NPDES General Permit.

Federal Register (68 FR 39087). July 1, 2003. Final National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges From Construction Activities; Notice of Final Issuance.

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